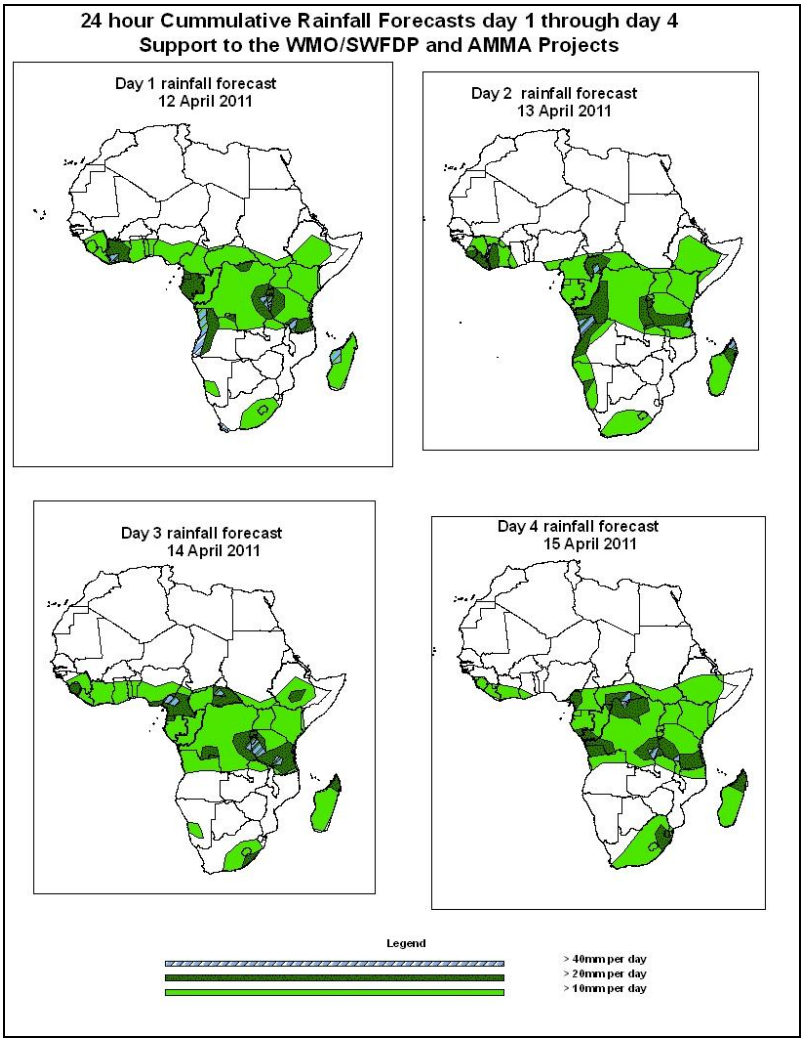
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 12 April – 06Z of 15 April 2011, (Issued at 12:45Z of 11 April 2011)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of probability of precipitation (POP) exceeded based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.



Summary

In the next four days, a significant decrease in rainfall is expected over Lake Victoria region while rainfall is expected to get enhanced over western parts of equatorial Africa. However, southern Tanzania and northern Mozambique will continue to receive moderate to heavy rainfall due to moist southeasterly flow from southwest Indian Ocean. The light to moderate rainfall is also expected to persist over the Gulf of Guinea region. In general,, there is an increased chance for rainfall to exceed 20mm per day over Cote D'Ivoire, Gabon, Cameroon, CAR, northeast DRC, southern Tanzania, Rwanda, Burundi, northern Madagascar and parts of eastern South Africa.

1.2. Models Comparison and Discussion-Valid from 00Z of 11 April 2011

The GFS, ECMWF and UKMET models show the persistence of an east-west oriented trough within the next four days, formed by a series of cut off lows over southern Sudan, parts of Central African region and the coast of the Gulf of Guinea. A central pressure value of 1002hpa is expected along its eastern end (mainly over Central African Republic / Sudan region), and a pressure value of 1005hpa along its western end. The lows associated with the meridional arm of the ITCZ are active over central DRC and northeastern Tanzania by 24 hours. The low pressure system over Angola region maintains a central pressure value of 1008hpa. The three models; ECMWF, GFS and UKMET show some level of similarity in their presentation of pressure patterns.

The St. Helena High pressure system over southeast Atlantic maintains a central pressure value of 1020hpa from 24 and intensifying progressively from 1024 to 1028hpa in 48 and 72 hours, weakening to 1024hpa by 96 hours. The Mascarene high pressure system over southwest Indian Ocean intensifies from 1024hpa to 1028 hpa through 48 to 72 hours and weakens to 1024hpa by 96 hours.

At the 850hpa level, the GFS model shows the east-west oriented convergence line in the region between the coastal areas of the Gulf of Guinea and CAR deepens progressively through 24 to 96 hours.

The north-south oriented convergence line persists all through, active mostly over southern Sudan, DRC, western Tanzania, Rwanda and Burundi. The discontinuity over northern Angola is expected to weaken gradually through 48 to 96 hours.

Mostly northeasterly to easterly winds dominate across most of the tropical western and central African countries at the 700hpa level with strong lower tropospheric convergence dominating the flow over Gabon, Congo, northeast DRC and northern Angola.

Lower tropospheric anticyclonic flow over southern Africa is expected to weaken gradually through 24 to 96 hours as a result of the eastward propagating mid-latitude frontal system across South Africa.

At 500HPa, a deep mid-latitude westerly trough is expected to propagate between Egypt and Persian Gulf through 24 to 96 hours, with the southern extent of the trough reaching the latitudes of Sudan, Eritrea and northern Ethiopia. Similarly, a mid-latitude westerly trough is expected to propagate from its current position in Mozambique Channel to western Indian Ocean through 24 to 96 hours, while a new trough is approaching the southern coast of South Africa after 96 hours.

A zone of strong wind (>110Kts) at 200hpa level associated with the Sub Tropical westerly Jet is expected in the vicinity of Libya, Egypt and the mid-east and tends to strengthen into >130kts through 48 to 72 hours and weakens back to >110kts after 96 hours.

Similarly, strong winds (>110Kts) associated with the Sub-Tropical Westerly Jet in the Sub Tropical region of South Africa, south Atlantic and the Indian Ocean is expected to weaken gradually through 48 to 96 hours.

In the next four days, a significant decrease in rainfall is expected over Lake Victoria region while rainfall is expected to get enhanced over western parts of equatorial Africa. However, southern Tanzania and northern Mozambique will continue to receive moderate to heavy rainfall due to moist southeasterly flow from southwest Indian Ocean. The light to moderate rainfall is also expected to persist over the Gulf of Guinea region. In general,, there is an increased chance for rainfall to exceed 20mm per day over Cote D'Ivoire, Gabon, Cameroon, CAR, northeast DRC, southern Tanzania, Rwanda, Burundi, northern Madagascar and parts of eastern South Africa.

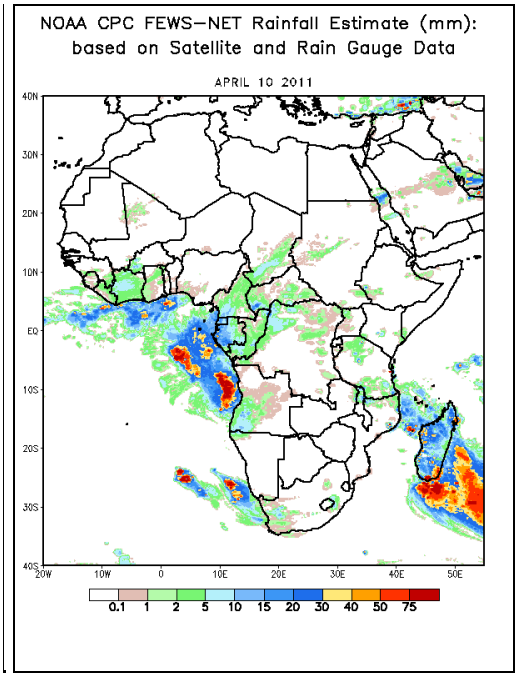
2.0. Previous and Current Day Weather Discussion over Africa (10 April – 11 April 2011)

2.1. Weather assessment for the previous day (10 April 2011):

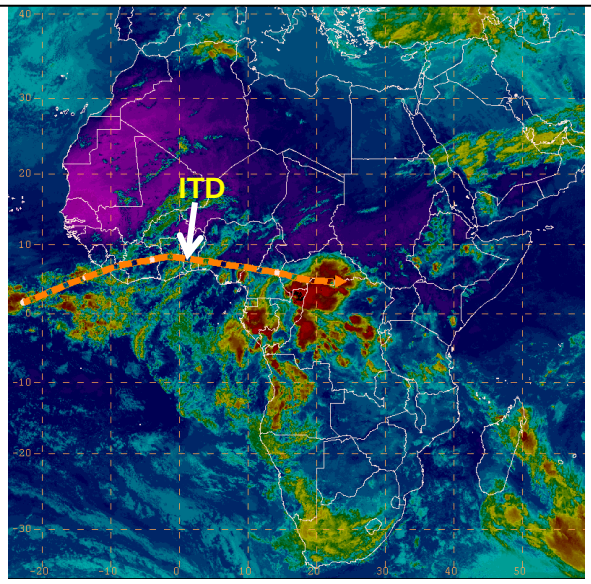
During the previous day, a combination of moderate and heavy rainfall was observed over Cote D'Ivoire, parts of Ghana, Cameroon, Gabon, CAR, Congo, northern DRC and Madagascar.

2.2. Weather assessment for the current day (11 April 2011): Intense clouds are observed over parts of Gulf of Guinea coast, CAR, DRC, Uganda, Tanzania, Zambia, Malawi, Ethiopia, Madagascar, Angola, Cameroon, Congo, Gabon, Burundi and Rwanda

.



IR Satellite Image (valid 1722Z) and position of ITD, based on 1200Z Surface Analysis; 11 April 2011



Previous day rainfall condition over Africa (Left) based on the NCEP CPCE/RFE and current day cloud cover (top) based on IR Satellite image

Author(s): **Orlando Mendes (Direccao Geral da Meteorologia Nacional da Guine-Bissau) / CPC-African Desk), orlando.mendes@noaa.gov and**

Onyilo Desmond Onyilo (Nigerian Meteorological Agency) / CPC-African Desk), Desmond.Onyilo@noaa.gov

---